

What is claimed is:

1. A detector of breaks in porous elements for a material separator, comprising
  - a transmitter of an RF signal;
  - a receiver of the RF signal;
- 5 a chamber including a barrier to the RF signal and a path through the barrier, the path being capable of allowing the RF signal and the material to move therethrough, one of the transmitter and the receiver being inside the chamber and the other of the transmitter and the receiver being outside the chamber;
  - a porous element mount to receive a porous element fully across the path.
2. The detector of claim 1, the RF signal being in the microwave range of RF electromagnetic energy.
3. The detector of claim 1 further comprising
  - an electrically conductive porous element fixable in the porous element mount to extend fully across the path, the electrically conductive porous element including preconfigured interstices therethrough, the RF signal being at least substantially
  - 5 attenuated in passing through the preconfigured interstices.
4. The detector of claim 1 further comprising
  - a screen fixable in the porous element mount to extend fully across the path, the screen including a screen frame and metal screen cloth with preconfigured interstices therethrough, the RF signal being at least substantially attenuated in passing through
  - 5 the preconfigured interstices.
5. A material separator comprising

a housing including a material inlet, an overs outlet and a throughs material outlet;

a transmitter of an RF signal;

5 a receiver of the RF signal;

a chamber in the housing including a barrier to the RF signal and a path through the barrier, the path being capable of allowing the RF signal and the material to move therethrough, one of the transmitter and the receiver being inside the chamber and the other of the transmitter and the receiver being outside the chamber, the material inlet  
10 and the overs outlet being one of inside and outside the chamber and the throughs outlet being the other of inside and outside the chamber;

a porous element mount to receive a porous element fully across the path.

6. The separator of material of claim 5, the RF signal being in the microwave range of RF electromagnetic energy.

7. The separator of material of claim 5 further comprising

an electrically conductive porous element fixable in the porous element mount to extend fully across the path, the electrically conductive porous element including preconfigured interstices therethrough, the RF signal being at least substantially  
5 attenuated in passing through the preconfigured interstices.

8. The separator of material of claim 5 further comprising

a screen fixable in the porous element mount to extend fully across the path, the screen including a screen frame and metal screen cloth with preconfigured interstices therethrough, the RF signal being at least substantially attenuated in passing through  
5 the preconfigured interstices.

9. A separator system for separating material by a characteristic into segregated components, comprising

(a) a separator having a wire mesh screen with preconfigured interstices for receiving the material, a throughs outlet for directing segregated material from the vibratory separator which passes through the preconfigured interstices and an overs outlet for directing oversized material which does not pass through the preconfigured interstices; and

(b) a microwave system having (i) a microwave signal transmitter mounted in the vibratory separator for emitting a microwave signal with a wavelength frequency such that signal strength is significantly attenuated by the undamaged wire screen, (ii) a microwave signal receiver mounted in the vibratory separator, and (iii) a signaling source operably connected to the microwave signal receiver,

whereby significant microwave energy from the microwave signal emitted from the

transmitter is not allowed to pass through the wire mesh screen unless the integrity of the wire mesh screen is damaged thereby allowing significant microwave energy from the microwave signal emitted from the transmitter to pass therethrough and be received by the receiver, activating the signaling source to alert an operator of the separator system.

10. A process for detecting breaks in a porous element for a material separator, comprising

processing material through a separator;

- at least periodically transmitting an RF signal at the first side of the porous
- 5 element in the separator;
- shielding the other side of the porous element from the RF signal;
- sensing the presence of the sent RF signal above a threshold on the shielded
- other side of the porous element;
- activating a signaling source upon detecting an RF signal above the threshold.
11. The process of claim 10 further comprising
- turning off inflow of the material prior to sensing the presence of the sent RF
- signal.
12. The process of claim 10, transmitting the RF signal being continuous.